REMARKS

I. Support for the Amendments

Claims 2-4, which were previously dependent on claim 1 (now cancelled), are now dependent on claim 7. Claims 9-10, which were previously dependent on claim 8, are now dependent on claim 7. Claims 29 and 31-32, which were previously dependent on claim 28 (now cancelled), are now dependent on claim 30. Claim 30, which was previously dependent on claim 28, is now an independent claim.

Support for amended claims 2-4, 7-10, 16, 19, 21, and 29-32 and for new claims 35-43 can be found in the original specification and claims. Additional support for amended claims 2 and 29 and for new claim 40 can be found, e.g., on page 11, lines 5-6; from page 12, line 20, to page 15, line 16; on page 16, lines 9-16; and in the Examples. Additional support for amended claims 3, 8, 16, 19, 21, and 30 and for new claims 35-37 can be found, e.g., from page 10, line 31, to page 11, line 3; on page 11, lines 8-17; on page 12, lines 4-5; from page 12, line 33, to page 13, line 1; on page 15, lines 1-16; on page 16, lines 1-7; from page 16, line 18, to page 17, line 4; from page 17, line 32, to page 20, line 32; and in the Examples. Additional support for amended claims 4, 8, 16, 19, and 21 can be found, e.g., on page 6, lines 3-12; on page 7, lines 11-26; on page 16, lines 1-16; and on page 22, lines 1-5. Additional support for amended claims 7, 8, 16, 19, 21, and 30 and for new claim 35 can be found, e.g., on pages 5-9; on page 6, lines 3-12; on page 16, lines 1-7; from page 16, line 18, to page 20, line 20; and in the Examples. Additional support for amended claim 9 can be found, e.g., on page 12, lines 20-27; on page 13, lines 1-3; from page 13, line 24, to page 14, line 2; on page 19, lines 21-25; on page 21, lines 16-23; on page 22, lines 1-5; and in the Examples. Additional support for amended claims 10, 31, and 32 and for new claims 42 and 43 can be found, e.g., on page 11, line 19-24; from page 12, line 29 to page 13, line 3; on

page 22, lines 7-8; and in the Examples. Additional support for amended claim 19 can be found, e.g., from page 7, line 28, to page 8, line 10; on page 17, lines 16-30; on page 21, lines 1-14; and in the Examples. Additional support for amended claim 19 and for new claim 38 can be found, e.g., on page 11, lines 26-28; on page 12, lines 20-27; on page 113, lines 1-3; on page 19, lines 21-25; on page 21, lines 16-33; and in the Examples. Additional support for amended claims 19, 21, and 30 and for new claim 39 can be found, e.g., on page 11, lines 26-38; on page 12, lines 12-16; on page 12, lines 20-27; from page 13, line 17, to page 14, line 2; on page 21, lines 16-33; and in the Examples. Additional support for amended claim 21 can be found, e.g., on page 8, lines 12-26; on page 17, lines 16-30; on page 21, lines 1-14; and in the Examples. Additional support for new claim 35 can be found, e.g., on page 9, lines 18-28; from page 17, line 21, to page 18, line 4; and in the Examples. Additional support for new claim 41 can be found, e.g., on page 11, lines 19-24, on page 12, lines 12-16; from page 13, line 17, to page 14, line 2; on page 21, lines 25-27; and in the Examples.

II. Status of the Claims

Claims 1-34 were originally in the application, with claims 1, 5-8, 11, 16, 19, 21, 28, 33, and 34 being the independent claims. Claims 1-4 and 6-32 were elected with traverse in Response to the Election/Restriction Requirement, with claims 1, 7, 8, 11, 16, 19, 21, and 28 being the independent claims.

In the Office Action mailed 26 December 2002, the Examiner rejected claims 1-4 and 6-32, which were all the remaining claims.

Applicants respectfully request the Examiner to cancel elected claims 1, 6, and 28 and non-elected claims 5, 33, and 34 without prejudice to the pursuit of such claims in a suitable continuing application.

Currently, claims 2-4, 7-27, 29-32, and 35-43 are pending in the application, with claims 7, 8, 11, 16, 19, 21, 30, and 35 being the independent claims and with claims 35-43 being new claims.

Claims 2-4, which were previously dependent on claim 1 (now cancelled), are now dependent on claim 7. Claims 9-10, which were previously dependent on claim 8, are now dependent on claim 7. Claims 29 and 31-32, which were previously dependent on claim 28 (now cancelled), are now dependent on claim 30. Claim 30, which was previously dependent on claim 28, is now an independent claim.

III. Cancellation of Non-Elected Claims 5, 33, and 34 Without Prejudice

The Examiner has made the restriction requirement final and requested cancellation of non-elected claims. Applicants request the Examiner to cancel them without prejudice to allow the option of filing one or more divisional applications at a later date.

IV. Acknowledgement of the Priority Claim to Provisional Application

Applicants thank the Examiner for acknowledging the priority claim to provisional application 60/248,876, filed November 15, 2000.

V. Objection to the Declaration as Defective is Accommodated by the Filing Herewith of a Supplemental Declaration and Power of Attorney

The Examiner has objected to the declaration as defective. The Examiner maintains that "there is no information in the oath regarding the first named inventor, Richard Philpott." The Examiner has objected to the Declaration as filed, because Richard Philpott did not provide his mailing address, residence or citizenship. This information was unavailable at the time when the Declaration was prepared. The other inventors added their respective addresses, residences, and citizenships.

Applicants submit herewith a Supplemental Declaration and Power of Attorney for Patent Application executed by inventor Richard Philpott and containing the requested information. Applicants respectfully request the Examiner to enter it into the case.

VI. Rejection of Claims 1-4, 6-10, and 16-18 Under 35 U.S.C. § 112, Second Paragraph is Accommodated in Part and Traversed in Part

The Examiner has rejected claims 1-4, 6-10, and 16-18 under 35 U.S.C. 112, second paragraph (pp. 4-5; par. 5 (a-e)). The Examiner alleges:

> 5. Claims 1-4, 6-10, 16-18 are rejcted under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
>
> A) Claims 1-4, 6-7 are indefinite over the recitation "including preserving means sorbed to the solid matrix. . ." because it is unclear

whether the preserving step is an active process step which is required or whether the preserving is inherent in the method step of the applying to a matrix. It is unclear how the step relates to the method as a whole. Similarly, "to derive genetic material from the sample" is unclear whether by merely preserving the genetic material "derives" the genetic material from the sample. As written it is unclear what is required by the method. Thus, the metes and bounds of the claimed invention are unclear.

B) Claim 2 is indefinite over the recitation "cells" because Claim 1 does not provide any "cells." Thus, "cells," in Claim 2, lacks proper antecedent basis.

C) Claim 4 is indefinite over the recitation "dissociating the cells of the tissue sample" because it is unclear whether the "cells of the tissue sample" are dissociated from the tissue itself or from another source. Thus, it is unclear from what the cells are dissociated. Clarification is requested.

D) Claims 8-10 require a method of isolating and analyzing genetic material, however, it is unclear whether the method steps achieve the preamble because the final process step is only directed to analyzing the genetic material. With respect to the isolating step, it is unclear whether the isolating step was accomplished by the lysing of the cells/virions or whether the claim is intended to mean isolating the genetic material from the solid medium also. Clarification is requested. Further, Claim 9 is indefinite over the recitation "dissociating the cells of the tissue sample" because it is unclear whether the "cells of the tissue sample" are dissociated from the tissue itself or from another source. Thus it is unclear from what the cells are dissociated. Clarification is requested.

E) Claims 16-18 are indefinite over the recitation "dissociating the cells of the tissue sample" because it is unclear whether the "cells of the tissue sample" are dissociated from the tissue itself or from another source. Thus, it is unclear from what the cells are dissociated. Clarification is requested. (Pp. 4-5, par. 5 (a-e).)

Applicants have cancelled claims 1 and 6 without prejudice. Claims 2-4 and 7-10 have been amended in response to the Examiner's rejection of these claims under 35 U.S.C. 112, second paragraph in subparagraphs A, B, and D (first portion). Applicants respectfully

submit that the present claims 2-4, 7-10, and 16-18 fulfill the requirements of 35 U.S.C. 112, second paragraph, and request the Examiner's reconsideration of these claims accordingly.

In addition, with respect to paragraphs C, D (second portion relating to claim 9), and E, Applicants note that the specification states:

> Additionally, the method further includes any processing known to those of skill in the art that dissociates the tissues sample into cells. (P. 16, ll. 11-13.)

The specification also states:

> Methods of dissociating cells, such as cells in tissues, organs, or multicellular organisms, include physical, chemical, and enzymatic methods. Examples include, but are not limited to, mincing, homogenizing, sonicating, and grinding, preferably in a physiological buffer, such as described in this specification or known to those of ordinary skill in the art. (P. 22, ll. 1-5)

Dissociation of cells in tissues, organs, multicellular organisms, and the like, is a common laboratory practice familiar to one of ordinary skill in the art and may be achieved by a variety of methods. With respect to subparagraphs C, D (second portion relating to claim 9), and E, Applicants respectfully traverse the Examiner's rejection and maintain that no further clarification is required.

Applicants respectfully submit that the present claims 2-4, 7-10, and 16-18 fulfill the requirements of 35 U.S.C. 112, second paragraph, and request the Examiner's reconsideration of the claims accordingly.

VII. Rejection of Claims 1-4, 6, 8, and 10 Under 35 U.S.C. § 102(e) is Rendered Moot

The Examiner has rejected claims 1-4, 6, 8, and 10 under 35 U.S.C. 102(e) as being anticipated by Smith et al. (US 2001/0000149 A1, Publication Date: April 2001). This published application corresponds to U.S.S.N. 09/726,627 (filed 30 November 2000), which is a continuation of U.S.S.N. 09/507,548 (filed 18 February 2000 and now allowed), which is a divisional of U.S.S.N. 09/398,625 (filed 18 September 1999).

The Examiner alleges:

> Smith et al. (herein referred to as Smith) teaches a solid medium and process for the storage and rapid purification of nucleic acid. Smith teaches a method of storing the genetic material and subsequently analyzing the genetic material which includes the steps of immobilizing the genetic material on a support while enabling cellular lysis and release of genetic material from the lysed cells and stabilizing the immobilized released genetic material on the support (abstract) (limitations of Claim 1a, 1b, 6, 8). The genetic material may then be eluted to generate a soluble genetic material fraction and analyzed (abstract) (limitations of Claim 1c). Smith teaches that the chemical coating solution is reacted with the filter membrane to produce the filter membrane of the invention. The chemical coating solution comprises a weak base, a chelating agent and an anionic surfactant or detergent (para 52) (limitations of Claim 3). The nucleic acid of the invention may be any form of nucleic acid containing material such as blood cultured mammalian cells, saliva, urine, cultured bacterial cells yeast, solid tissue, for example (para 55) (limitations of Claim 4, 10). The nucleic acid may be eluted from the storage medium by elution for subsequent downstream analysis such as PCR, LCR, reverse transcription or sequencing (para 56). Smith teaches that the invention may be used in genomic, for example, forensic application, paternity/maternity identification (para 63-64) (limitations of Claim 2). As provided in Example 4, genomic DNA may be prepared from saliva (page 7-8). (Pp. 6-7, par. 6.)

Applicants have cancelled claims 1 and 6, without prejudice, and have amended claims 2-4 and 10 to be dependent on claim 7 (along with other amendments). The Examiner did not reject claim 7 with respect to Smith et al.

As originally filed, claim 7 read as follows (emphasis added):

7. A method of genetic analysis, wherein the method comprises:

a. upstream processing of a biological sample **to produce a suspension** comprising cells comprising genetic material;

b. **applying the suspension** to a **first solid medium**;

c. **contacting the cells on the first solid medium** with a **second solid medium** comprising a matrix, including preserving means sorbed to the matrix for protecting the genetic material from degradation, to derive genetic material from the sample; and

d. analyzing the genetic material.

As presently amended, claim 7 reads (emphasis added):

7 (Amended). A method of genetic analysis, wherein the method comprises:

a. upstream processing of a biological sample **to produce a suspension** comprising cells comprising genetic material;

b. **applying the suspension** to a **first solid medium**;

c. **contacting the cells on the first solid medium** with a **second solid medium** comprising:

i. a matrix; and

ii. a composition sorbed to the matrix, the composition comprising preserving means for protecting genetic material from degradation;

d. sorbing the genetic material to the solid medium; and

e. analyzing the genetic material.

Smith et al. does **not** teach or suggest the **application of a suspension of cells to a first solid medium**, followed by **contacting the cells on the first solid medium with a second solid medium**. These limitations are found both in claim 7 as originally filed and in amended claim 7. Therefore, the limitations of claim 7 render this rejection moot with respect to amended claims 2-4 and 10.

With respect to claim 8, Applicants have amended claim 8 to include some of the limitations of claim 7. Again, Smith et al. does **not** teach or suggest the **isolation of a cell or virion on a first solid medium**, followed by **applying the cell or virion on the first solid medium to a second solid medium**. Therefore, Smith et al. does not anticipate amended claim 8, thus rendering this rejection moot.

Applicants respectfully submit that the present claims 2-4, 8, and 10 fulfill the requirements of 35 U.S.C. 102(e) and request the Examiner's reconsideration of these claims accordingly.

VIII. Rejection of Claims 1-3, 6, 8, and 10 Under 35 U.S.C. § 102(b) is Rendered Moot

The Examiner has rejected claims 1-3, 6, 8, and 10 under 35 U.S.C. 102(b) as being anticipated by Burgoyne (U.S. Patent 5,807,527; September 1998).

The Examiner alleges:

> Burgoyne teaches a method of storage of DNA using a solid medium having a compound which protects against degradation of DNA incorporated into or absorbed on the matrix, and for recovery of DNA or in situ use of DNA (abstract). Blood dried onto filter paper is a proven alternative and has been shown that DNA can be extracted and isolated from dried blood spots in a form and in sufficient quantities for use in DNA analysis (col.1, lines 60-65). Burgoyne teaches that the solid matrix may comprise a sold support such as an absorbent cellulose-based paper or a micromesh of synthetic plastics material. Moreover, Burgoyne teaches that the solid medium comprises a composition comprising a weak base, a chelating agent and an anionic surfactant or detergent (col. 2, lines 60-64) (limitations of Claim 3). DNA on filter paper specially treated in accordance with this invention was purified in situ, then subjected to the polymerase chain reaction (col. 4, lines 37-30). Burgoyne teaches that treated paper was much more efficient than untreated paper. Treated paper gave recoveries of approximately 100% whereas untreated paper only has about 10% recovery (col. 6, lines 8-10). Burgoyne teaches that exon 2 of the nRAs protooncogene and male specific Y chromosome repeat, were genotyped (limitation of Claim 2). (P. 7, par. 7.)

Applicants have cancelled claims 1 and 6, without prejudice, and have amended claims 2-3 and 10 to be dependent on claim 7 (along with other amendments). The Examiner did not reject claim 7 with respect to Burgoyne. The text of claim 7, both as originally filed and as amended has been discussed, *supra*.

Like Smith et al., Burgoyne does **not** teach or suggest the **application of a suspension of cells to a first solid medium**, followed by **contacting the cells on the first solid medium with a second solid medium**. These limitations are found both in claim 7 as originally filed and in amended claim 7. Therefore, the limitations of claim 7 render this rejection moot with respect to amended claims 2-3 and 10.

With respect to claim 8, Applicants have amended claim 8 to include some of the limitations of claim 7. Again, like Smith et al., Burgoyne does **not** teach or suggest the **isolation of a cell or virion on a first solid medium**, followed by **applying the cell or virion on the first solid medium to a second solid medium**. Therefore, Burgoyne does not anticipate amended claim 8, thus rendering this rejection moot.

Applicants respectfully submit that the present claims 2-3, 8, and 10 fulfill the requirements of 35 U.S.C. 102(b) and request the Examiner's reconsideration of these claims accordingly.

IX. Rejection of Claims 1-4, 6, 8-10, 19-24, 26-29, and 31-32 Under 35 U.S.C. § 102(a) is Traversed

The Examiner has rejected claims 1-4, 6, 8-10, 19-24, 26-29, and 31-32 under 35 U.S.C. 102(a) "as being anticipated by Higgins et al. (Am. J. Trop. Med. Hyg. (Feb. 2000) 2:310-318) in view of Gibco BRL Products Catalog (FTA Card, pages 2-7, 1999) and further in view of Burgoyne (U.S. Patent 5,496,562, March 1996)."

The Examiner alleges:

> Higgins teaches detection of Francisella tularensis in infected mammals and vectors using a probe-based polymerase chain reaction. Higgins uses specially formulated filter paper (FTA) for rapid sample preparation. Higgins teaches taking clinical samples from swabs from skin ulcers of patients suspected of being infected with tularemia (page 312, col.1). The DNA was spotted as 3-5 µl aliquots onto FTA filter paper. Upon receipt at USAM-RIID, the samples were processed. Higgins teaches evaluating the FTA paper by performing a PCR reaction with primers specific for the F. tularensis tul 4 gene (page 312, col. 2).

> The stability of templates and the ease of intercontinental transport by using DNA deposited onto FTA filter papers was demonstrated. Higgins teaches that FTA paper analysis is a simple, inexpensive, and rapidly performed sample preparation method. Therefore, Higgins teaches a method of isolating cells on a swab and contacting the isolated cells from the swab onto a FTA filter paper and analyzing the nucleic acid.
>
> As provided by Gibco BRL Products catalog, FTA paper is impregnated with a proprietary formulation. Moreover, Gibco teaches that the product is subject to Patent 5,296,562. The formulation of Patent 5,496,562 absorbed on the paper is a weak base, a chelating agent and an anionic surfactant or detergent. Thus, Higgins teaches every limitation of the claimed invention. (Pages 8-9, para. 8.)

Applicants have cancelled claims 1 and 6, without prejudice, and have amended claims 2-4, 9, and 10 to be dependent on claim 7 (along with other amendments).

The Examiner did not reject claim 7 with respect to Higgins et al. The text of claim 7, both as originally filed and as amended has been discussed, *supra*. Higgins et al. does **not** teach or suggest **the application of a suspension of cells to a first solid medium**, followed by **contacting the cells on the first solid medium with a second solid medium**. These limitations are found both in claim 7 as originally filed and in amended claim 7. Therefore, the limitations of claim 7 render this rejection moot with respect to amended claims 2-4, 9, and 10.

With respect to claim 8, Applicants have amended claim 8 to include some of the limitations of claim 7. Higgins et al. does **not** teach or suggest the **dissociation of cells** in a biological sample, followed by **isolation of a cell or virion on a first solid medium**, and subsequently **applying the cell or virion on the first solid medium to a second solid medium**. Higgins does **not** disclose either the **dissociation of cells prior to isolation on the first solid medium or the isolation of a virion**. On page 312, Higgins et al. describes

1) swabbing of skin ulcers **without dissociation of cells** prior to isolation on the swab, followed by spotting onto FTA™ paper; 2) blotting/pressing of **small portions (1 cm x 1 cm) of liver or spleen or the cut surface** of liver **directly** onto FTA™ paper **with no isolation on a first solid medium**; 3) pipetting of blood **directly** onto FTA™ paper **with no isolation on a first solid medium**; and 4) aliquoting tick "extracts" (i.e., serially diluted homogenates of ticks) **directly** onto FTA™ paper **with no isolation on a first solid medium**. Furthermore, the purpose of the swab in Higgins is **for transfer, rather than for isolation**. Therefore, Higgins et al. does not anticipate amended claim 8, thus rendering this rejection moot.

With respect to claim 19-24 and 26-27, Applicants have amended claims 19 and 21 to include "**isolating the component of interest on a first solid medium and removing substantially all of the remaining components** of the sample" (step b, emphasis added). (Claim 20 is dependent on claim 19, and claims 22-24 and 26-27 are dependent on claim 21.) The purpose of the swab in Higgins is **for transfer, rather than for isolation**. The use of swabs, as taught by Higgins et al., **does not include isolation of the component** of interest in combination **with removal of other components**. Therefore, Higgins et al. does not anticipate the instant claims 19-24 and 26-27, thus rendering this rejection moot.

In addition, with respect to claims 21-24 and 26-27, claim 21 includes step b, "processing the sample to produce a suspension comprising cells or virions comprising genetic material," prior to the isolation of the cells or virions on the first solid medium. First, Higgins et al. **does not teach** isolation of genetic material from **virions**. Second, Higgins **does not teach** the processing of a sample to produce **a suspension** comprising cells or virions **prior to application on the first solid medium**. As noted *supra*, on page 312, Higgins et al. describes1) swabbing of skin ulcers **without dissociation of cells** prior to isolation on the swab, followed by spotting onto FTA™ paper; 2) blotting/pressing of **small**

portions (1 cm x 1 cm) of liver or spleen or the cut surface of liver **directly** onto FTA™ paper **with no isolation on a first solid medium**; 3) pipetting of blood **directly** onto FTA™ paper **with no isolation on a first solid medium**; and 4) aliquoting tick "extracts" (i.e., serially diluted homogenates of ticks) **directly** onto FTA™ paper **with no isolation on a first solid medium**. Furthermore, the purpose of the swab in Higgins is **for transfer, rather than for isolation**. Therefore, Higgins et al. does not anticipate claims 21-24 and 26-27, thus rendering this rejection moot.

As noted *supra*, Applicants have cancelled claims 28, without prejudice and have amended claims 29, 31, and 32 to be dependent on claim 30.

The Examiner did not reject claim 30 with respect to Higgins et al. The text of claim 30 as originally filed reads:

30. The method of claim 28, further comprising:

e. detecting contamination of the first solid medium.

As amended to include all the limitations of claim 28, now-independent claim 30 reads as follows:

30 (Amended). A method of isolating and analyzing genetic material from cells or virions, wherein the method comprises:

a. providing a first solid medium comprising cells or virions comprising genetic material;

b. contacting the cells or virions on the first solid medium with a second solid medium, wherein the second solid medium comprises a

matrix having a composition sorbed thereto, wherein the composition comprises:

i. a weak base;
ii. a chelating agent; and
iii. an anionic surfactant or detergent;

c. lysing the cells or virions and retaining the genetic material with the second solid medium;

d. analyzing the genetic material; and

e. detecting contamination of the first solid medium.

Claim 30 has been re-written as an independent claim. The Examiner did not find Higgins et al. to anticipate claim 30. Claims 29, 31, and 32, which were previously dependent on claim 28 (now cancelled), are now dependent on claim 30. Therefore, the limitations of claim 30 render this rejection moot with respect to amended claims 29, 31, and 32.

Moreover, the Examiner notes that "Higgins teaches that FTA paper analysis is a simple, inexpensive, and rapidly performed sample preparation method," but the present invention is more expensive and more complex, due, e.g., to the need for two solid media and the greater complexity in usage.

Applicants respectfully submit that the present claims 2-4, 8-10, 19-24, 26-27, 29, and 31-32 fulfill the requirements of 35 U.S.C. 102(a) and request the Examiner's reconsideration of these claims accordingly.

X. Rejection of Claims 1-4 and 6-32 Under 35 U.S.C. § 103(a) Is Traversed

The Examiner has rejected claims 1-4 and 6-32 (all remaining claims after the restriction) under 35 U.S.C. 103(a) as unpatentable for obviousness over Martinson et al. (U.S. Patent 5,811,061; Sept. 22, 1998) in view of Burgoyne (U.S. Patent 5,807,527; Sept. 1998).

With respect to the rejection, the Examiner alleges:

> Martinson et al....teaches a method for creating a leukocyte rich sample. Martinson teaches leukocytes are a source of infectivity in blood and they provide desirable material for diagnostic assays. The leukocytes are separated via filters. The filter may be treated to lyse the cells contained in the filter (col. 6, lines 20-24). The cell lysate may then be flushed out of the filter using an isotonic saline solution and collected. The resultant cell lysate may be then used as a test material for diagnostic assays (col. 6, lines 30-35).
>
> Martinson does not specifically teach collecting the cell lysate on a FTA filter paper. However, FTA filter paper is suitable for storage of blood samples as well as a variety of cells and tissues for PCR analysis and other genomic applications. (Pages 9-10, par. 10.)

The Examiner then relies upon Burgoyne '527 to supply the deficiencies of Martinson. Burgoyne has already been discussed *supra*.

The Examiner alleges further:

> There, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Martinson to further include the collection of the cell lysate onto the solid medium taught by Burgoyne. Martinson teaches that the leukocytes are desirable for diagnostic assays. Moreover, Burgoyne teaches that DNA may be stored on the solid matrix having a composition thereon are suited for performance under automated conditions.

> Moreover, Burgoyne teaches the benefits of using the solid support for storage of DNA for long periods of time. The benefits of the storage of the DNA upon the solid matrix additional includes the low-volume files as compared to liquid blood samples which require more care. There, the ordinary artisan would have been motivated to have purified leukocytes from blood for the expected benefit of diagnostic importance, taught by Martinson, and stored the sample DNA upon a solid matrix of Burgoyne for the expected benefits of long-term, low-volume storage, automation and ease in handling specimens. (Page 11, par. 10.)

Applicants respectfully disagree with the Examiner's comments and traverse the obviousness rejection. There is **no suggestion** in Martinson to use a **second solid medium** or to **store the DNA on a solid medium**. There is simply a **single filter** in an apparatus that is **essentially a modified syringe**. Following centrifugation, the leukocytes are collected on a filter and lysed by treatment of the filter. The nuclei are released, and the **cell lysate is collected in liquid form** and used for diagnostic assays. There is **no suggestion** to **isolate the cells on a first solid medium**, followed by **exposure to a second solid medium** where the **nucleic acids can be preserved** by a composition sorbed to the second solid medium. There is **no suggestion** to **isolate cells or virions on a first solid medium**, followed by **exposure to a second solid medium** comprising a composition capable of **lysing cells or virions** and **retaining the genetic material** with the second solid medium.

Likewise, there is **no suggestion in either** of the references **to combine the teachings of Martinson with Burgoyne**. As noted *supra*, Martinson simply discloses a single filter in an apparatus that is essentially a modified syringe. Following centrifugation, the leukocytes are collected on a filter and lysed by treatment of the filter. The nuclei are released, and the cell lysate is collected in liquid form. In essence, **the purpose of Martinson is to produce a liquid lysate**. In contrast, **Burgoyne focuses on the application of whole cells onto a treated solid medium capable of lysing the cells directly** without the need for a liquid lysate. As a result, **Burgoyne teaches away from**

Martinson, because one of ordinary skill in the art reading Martinson would assume that, because the method of Martinson produces a lysate, it would not be applicable for the treated solid medium of Burgoyne, resulting in **a doubling of the lysis steps**.

Moreover, the Examiner notes that the medium of Burgoyne is suitable for "for performance under automated" and can provide "long-term, low-volume storage, automation and ease in handling specimens," but the present invention with two solid media is more complex in structure and usage.

Applicants respectfully submit that the present claims 2-4, 7-27, and 29-32 fulfill the requirements of 35 U.S.C. 103(a) and request the Examiner's reconsideration of these claims accordingly.

XI. Non-Statutory Double Patenting Rejection of Claims 1-4, 6, 8, and 10 is Rendered Moot

The Examiner has provisionally rejected claims 1-4, 6, 8, and 10 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 16 of copending Application 09/507,548 (now allowed, as discussed *supra*).

The Examiner alleges:

> Although the conflicting claims are not identical, they are not patentable distinct from each other because Claim 1 of the instant application is generic to all that is recited in Claim 16 of U.S. Application No. 09/507,548. That is, Claim 16 of U.S. Application No. 09/507,548 falls entirely with in the scope of Claim 1, or in other words, Claim 1 is anticipated by Claim 16 of 09/507,548. (Pages 12-13, par. 11.)

Claim 16 of 09/507,548 currently reads as follows:

16. A method of storing a genetic material and subsequently analyzing the genetic material by the steps of contacting cells having genetic material with a glass microfiber matrix sorbed with a FTA purification reagent while enabling cellular lysis and release of genetic material from the lysed cells, immobilizing and stabilizing the released genetic material, and disposing the matrix having the genetic material immobilized therein into heated water in the temperature range of 65°C to 100°C and releasing the genetic material into the heated water to generate a soluble genetic material fraction; and analyzing the eluted genetic material.

The Examiner further alleges:

Here, claim 16 of U.S. Application No. 09/507,548 recites a method of storing a genetic material and subsequently analyzing the genetic material by containing cells having genetic material with a glass microfiber matrix sorbed with an FTA purification reagent while enabling cellular lysis and release of genetic material from the lysed cells, immobilizing and stabilizing the released genetic material, and disposing the matrix having the genetic material immobilized therein into heated water in the temperature range of 65C to 100C and releasing the genetic material into the heated water to generate a soluble genetic material fraction, and analyzing the eluted genetic material.

Moreover, the method of Claim 16 differs from Claim 1 herein in that it fails to disclose the elements of the matrix, an analyzing step for phenotyping, and dissociation of cells from tissue. However, portions of U.S. Application No. 09/507,548 support each of these elements. Therefore, it would have been obvious to modify the method of claim 16 of U.S. Applicatoin No. 09/507,548 such that the matrix comprised a base, chelating agent and an anionic surfactant; the genetic material is analyzed for phenotyping and the cells are dissociated from tissue. One having ordinary skill in the art would have been motivated to make such a modification as per the teachings the supporting portions of U.S. Application No. 09/507,548. (P. 13, par. 11.)

Applicants have cancelled claims 1 and 6, without prejudice and have amended claims 2-4 and 10 to be dependent on claim 7 (along with other amendments). The Examiner did not reject claim 7 under the obviousness-type double patenting rejection. The text of claim 7, both as originally filed and as amended, has been discussed, *supra*.

Claim 16 and the specification of 09/507,548 do not teach the application of cells to a first solid medium, followed by contacting the cells on the first solid medium with a second solid medium. These limitations are found both in claim 7 as originally filed and in amended claim 7. Therefore, the limitations of claim 7 render this rejection moot with respect to amended claims 2-4 and 10.

With respect to claim 8, Applicants have amended claim 8 to include some of the limitations of claim 7. Again, claim 16 and the specification of 09/507,548 do not teach the isolation of a cell or virion on a first solid medium, followed by applying the cell or virion on the first solid medium to a second solid medium, thus rendering this rejection moot.

Applicants believe that these amendments and the cancellation of claims 1 and 6 render moot the Examiner's provisional rejection on the grounds of double patenting.

XII. Conclusion

It is believed that all outstanding rejections have been addressed by this submission and that all the claims are in condition for allowance. If discussion of any amendment or remark made herein would advance this important case to allowance, the Examiner is invited to call the undersigned as soon as convenient.

In view of the foregoing amendments and remarks, the present application is respectfully considered in condition for allowance. An early reconsideration and notice of allowance are earnestly solicited.

Applicants hereby request a three-month extension of time for the Amendment and accompanying materials. If, however, a petition for an additional extension of time is required, then the Examiner is requested to treat this as a conditional petition for an additional extension of time. Although it is not believed that any fee is required, in addition to the fee submitted herewith, to consider this submission, the Commissioner is hereby authorized to charge our deposit account no. 04-1105 should any fee be deemed necessary.

Respectfully submitted,

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APPENDIX I

REVISIONS OF CLAIMS PURSUANT TO REVISED RULE § 1.121

Pursuant to Revised Rule § 1.121(c)(1)(ii), the revisions of the claims are detailed as follows (marked new claims not required):

In the Claims:

Please amend claims 2-4, 7-10, 16, 19, 21, and 29-32 as follows:

2 (Amended). The method of [as set forth in] claim 7 [1], wherein the analyzing step further includes phenotyping the processed biological [tissue] sample and cells therein.

3 (Amended). The method of [as set forth in] claim 7 [1], wherein the preserving means [matrix further] comprises:

a. a weak base;

b. a chelating agent;

c. an anionic surfactant or detergent.

4 (Amended). The method of [as set forth in] claim 7 [1], wherein the upstream processing step further includes dissociating the cells of the biological [tissue] sample.

7 (Amended). A method of genetic analysis, wherein the method comprises:

a. upstream processing of a biological sample to produce a suspension comprising cells comprising genetic material;

b. applying the suspension to a first solid medium;

c. contacting the cells on the first solid medium with a second solid medium comprising:

i. a matrix; and

ii. a composition sorbed to the matrix, the composition comprising preserving means for protecting genetic material from degradation;

[a matrix, including preserving means sorbed to the matrix for protecting the genetic material from degradation, to derive genetic material from the sample; and]

d. sorbing the genetic material to the solid medium; and

e.[d.] analyzing the genetic material.

8 (Amended). A method of [isolating and] analyzing genetic material, wherein the method comprises:

a. obtaining a biological sample;

b. processing the biological sample to obtain one or more cells or virions comprising genetic material, wherein the processing step comprises:

i. dissociating cells in the biological sample; and

ii. isolating a cell or virion on a first solid medium;

c. applying the cell or virion isolated on the first solid medium [sample] to a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:

i. a weak base;

ii. a chelating agent; and

iii. an anionic surfactant or detergent;

d. lysing the cell or virion and retaining the genetic material with the second solid medium;

e. analyzing the genetic material.

9 (Amended). The method of claim [8] 7, wherein

a. the biological sample comprises an organ, a tissue, or a multi-cellular organism or colony; and

b. the processing step [b] a further comprises[:

i.] dissociating cells in the biological sample.[; and

ii. isolating the cells on a solid medium distinct from the solid medium of step c.]

10 (Amended). The method of claim [8] 7, wherein the genetic material comprises DNA or RNA.

16 (Amended). A method of detecting [isolating] and analyzing genetic material from a biological sample from a mammal, wherein the method comprises:

a. obtaining a biological sample comprising an organ or a tissue comprising cells comprising genetic material;

b. dissociating the cells to produce a suspension comprising the cells;

c. isolating the cells on a first solid medium;

d. contacting the cells on the first solid medium with a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:

i. a weak base;

ii. a chelating agent; and

iii. an anionic surfactant or detergent;

d. lysing the cells and retaining the genetic material with the second solid medium;

e. analyzing the genetic material.

19 (Amended). A method of detecting [isolating] and analyzing genetic material from a non-solid biological sample from a mammal, wherein the method comprises:

a. obtaining a non-solid biological sample comprising a component of interest, wherein the component contains a cell, a virus, or a combination thereof and wherein the cell or the virus comprises genetic material;

b. isolating the component of interest on a first solid medium and removing substantially all of the remaining components of the sample;

c. contacting the isolated component of interest on the first solid medium with a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:

i. a weak base;

ii. a chelating agent; and

iii. an anionic surfactant or detergent;

d. releasing the genetic material from the component of interest and retaining the genetic material with the second solid medium;

e. analyzing the genetic material.

21 (Amended). A method of isolating and analyzing genetic material, wherein the method comprises:

a. obtaining a sample;

b. processing the sample to produce a suspension comprising cells or virions comprising genetic material;

c. isolating the cells or virions on a first solid medium and removing substantially all of the remaining components of the sample;

d. contacting the cells or virions on the first solid medium with a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:

i. a weak base;

ii. a chelating agent; and

iii. an anionic surfactant or detergent;

e. lysing the cells or virions and retaining the genetic material with the second solid medium; and

f. analyzing the genetic material.

29 (Amended). The method of claim [28] 30, wherein the analysis of genetic material includes genotyping.

30 (Amended). [The method of claim 28, further comprising:] A method of isolating and analyzing genetic material from cells or virions, wherein the method comprises:

a. providing a first solid medium comprising cells or virions comprising genetic material;

b. contacting the cells or virions on the first solid medium with a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:

i. a weak base;

ii. a chelating agent; and

iii. an anionic surfactant or detergent;

c. lysing the cells or virions and retaining the genetic material with the second solid medium;

d. analyzing the genetic material; and

e. detecting contamination of the first solid medium.

31 (Amended). The method of claim [28] 30, wherein the genetic material comprises DNA or RNA.

32 (Amended). The method of claim [28] 30, wherein the genetic material comprises genomic DNA or mRNA.